US006779566B2

(12) **United States Patent**
Engel

(10) **Patent No.: US 6,779,566 B2**
(45) **Date of Patent: Aug. 24, 2004**

(54) **CONNECTOR DEVICE FOR SEALING AND DISPENSING FREEZE-DRIED PREPARATIONS**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **10/341,976**

(22) Filed: **Jan. 14, 2003**

(65) **Prior Publication Data**

US 2004/0134562 A1 Jul. 15, 2004

(51) **Int. Cl.**[7] **B65B 3/04**
(52) **U.S. Cl.** **141/25**; 141/2; 141/9; 141/18; 141/100; 141/330; 206/229; 206/570
(58) **Field of Search** 141/2, 9, 18, 21, 141/25–28, 100, 329, 330; 206/223, 229, 570–572

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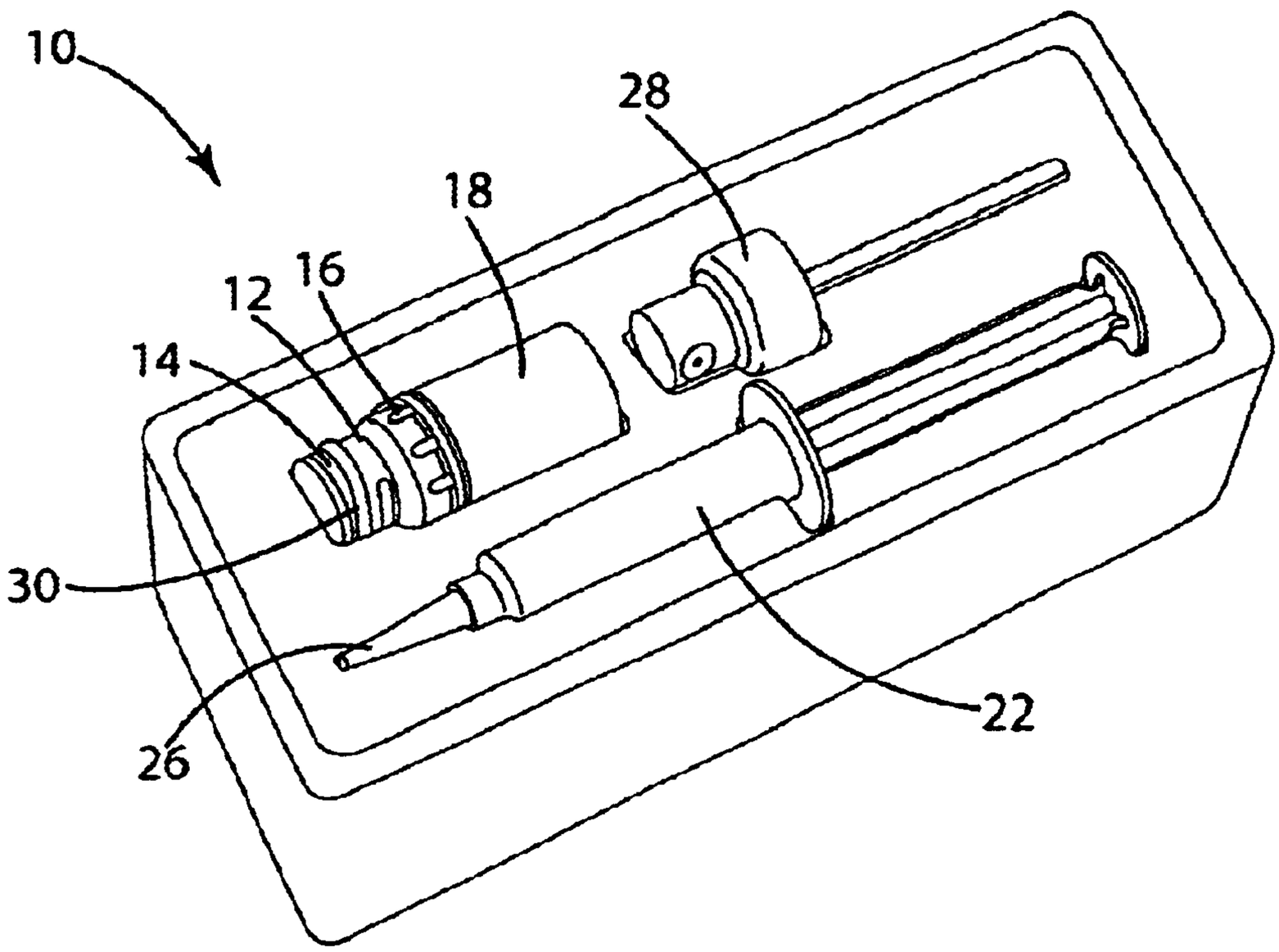
(57) **ABSTRACT**

A connector device is provided that permits two separately stored ingredients to be mixed in and dispensed from the same container. The connector device includes an attachment mechanism for connecting two containers together to permit combining of separately stored ingredients and another attachment mechanism for connecting a dispenser to the container containing the combined ingredients to permit dispensing of the product directly from that container. In a preferred embodiment, a stopper is included in the neck of the first container, the second container including a device for penetrating the stopper. Also disclosed is a method of intermixing products with the connector device.

20 Claims, 5 Drawing Sheets



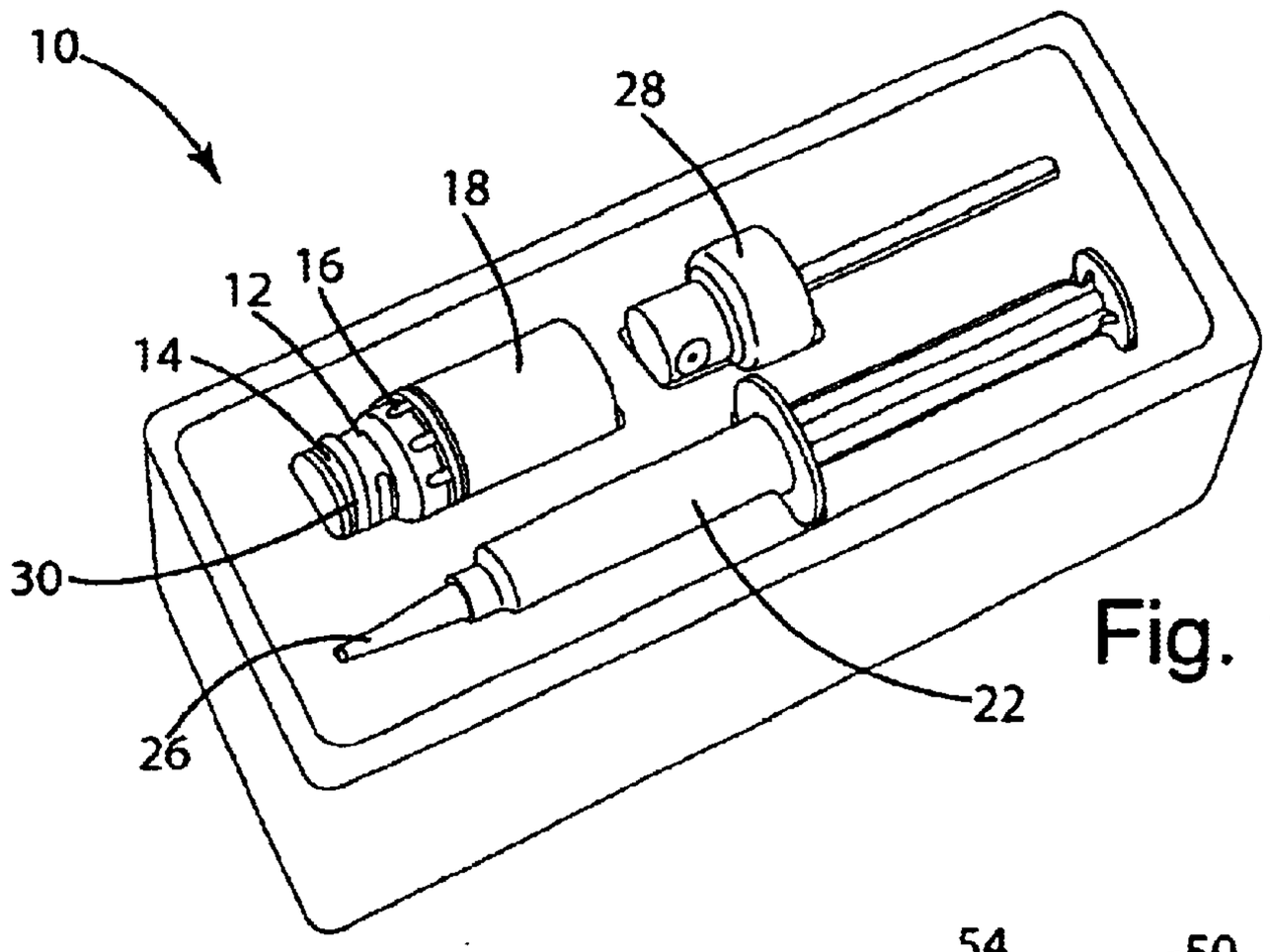


Fig. 1

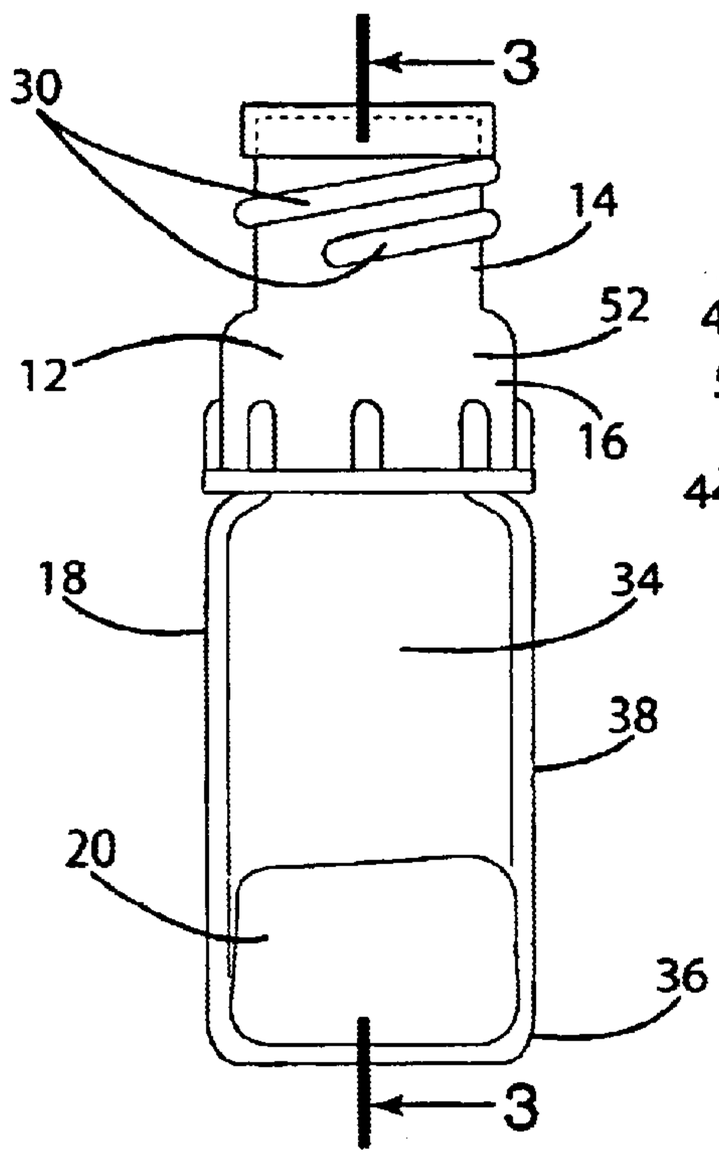


Fig. 2

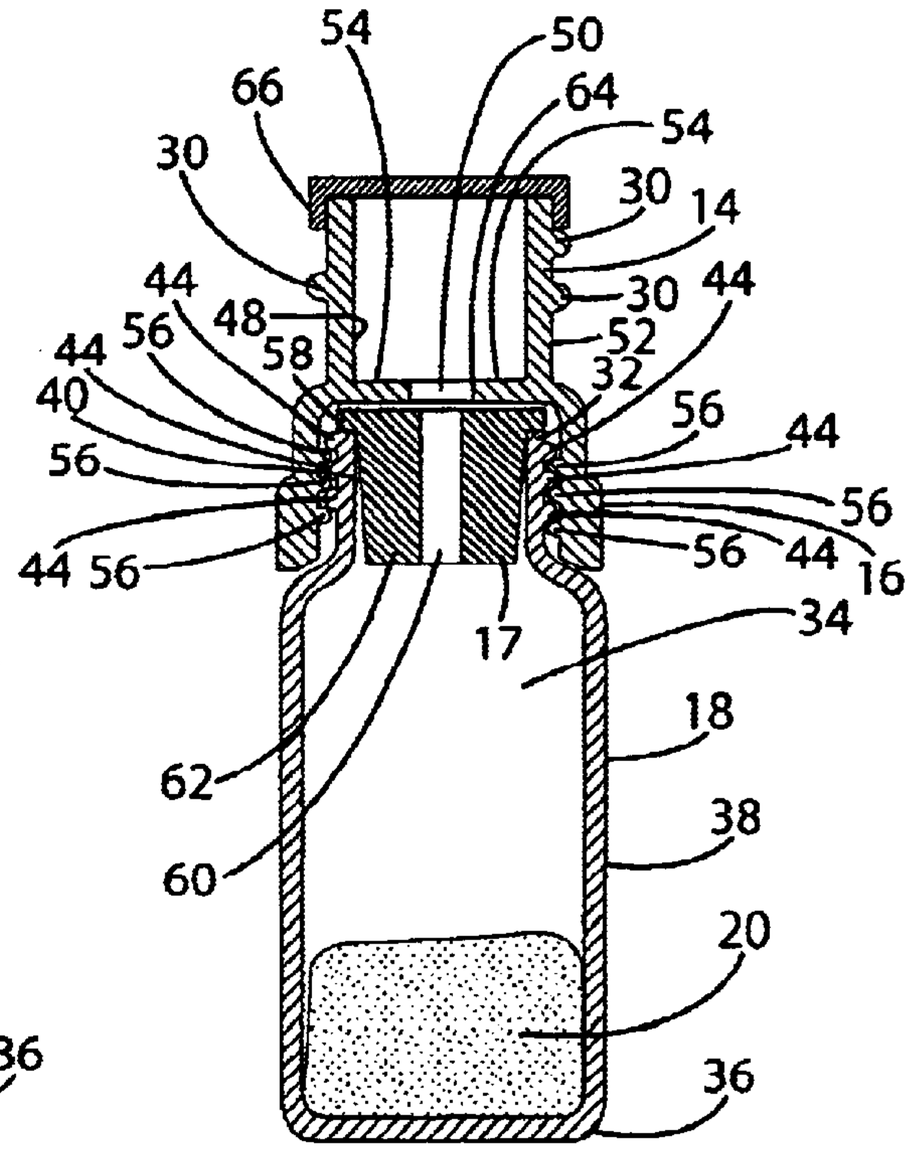
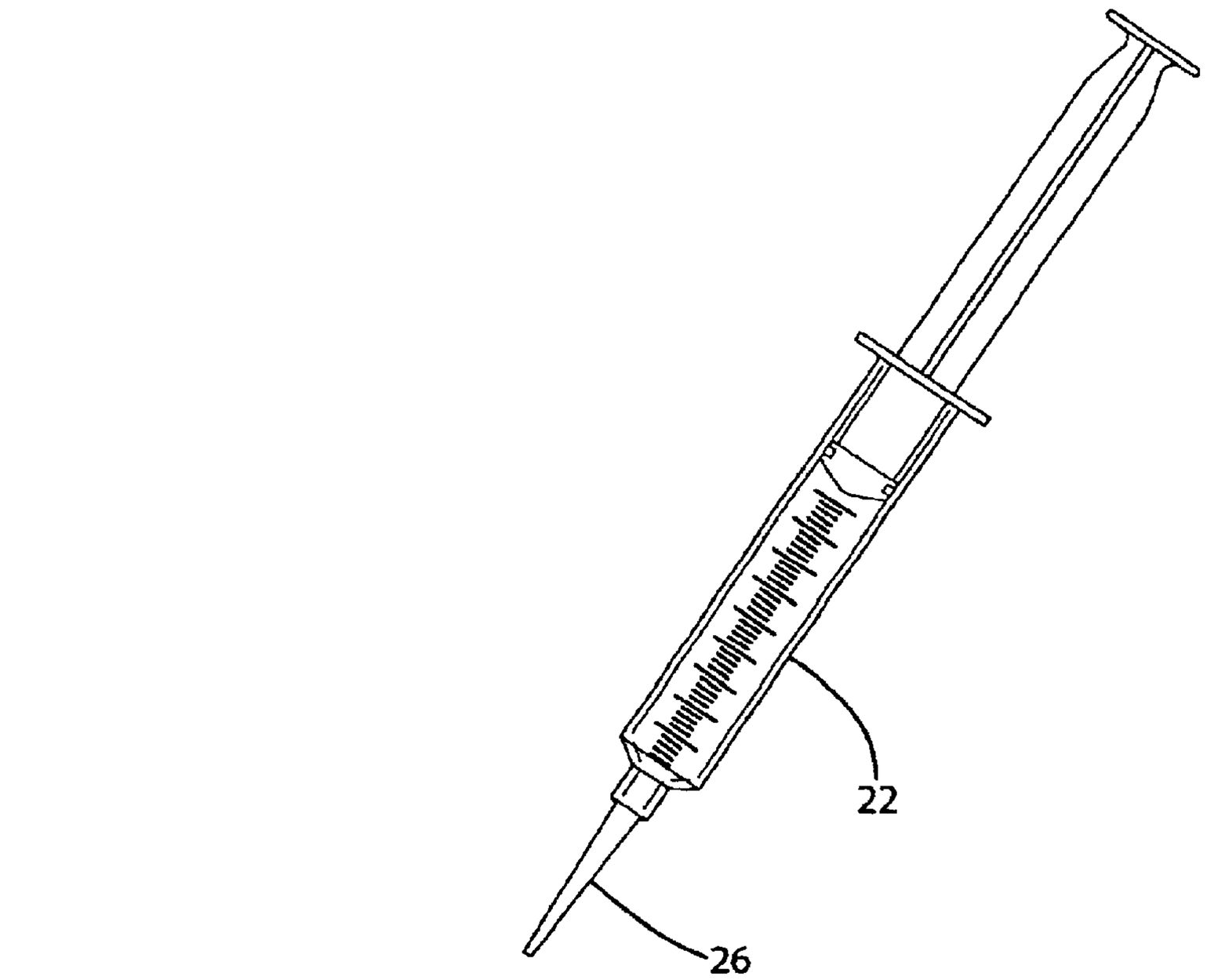


Fig. 3



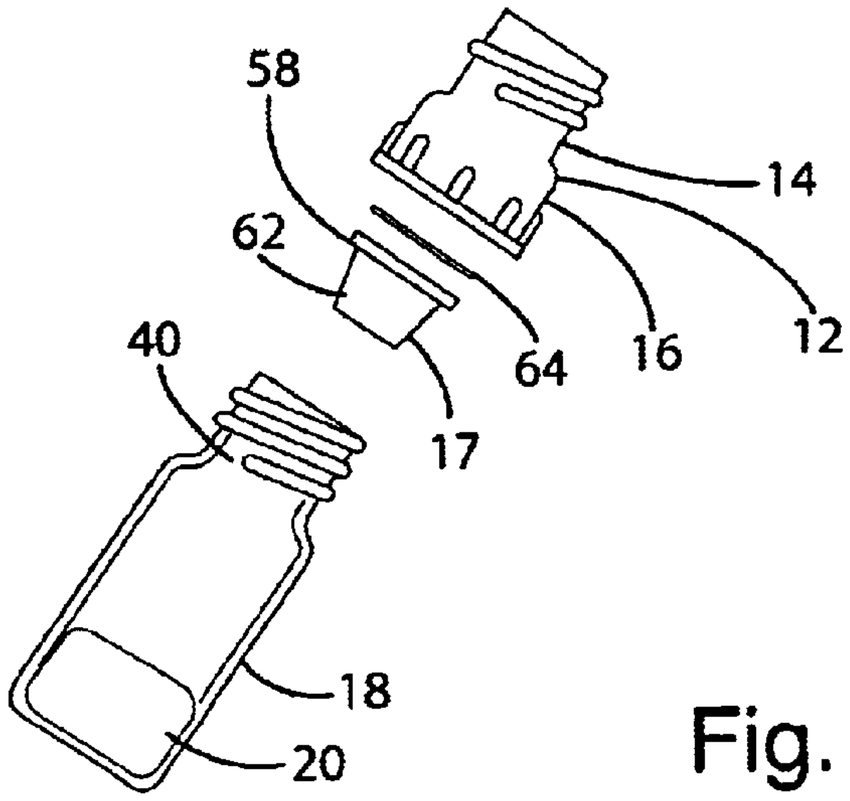


Fig. 4

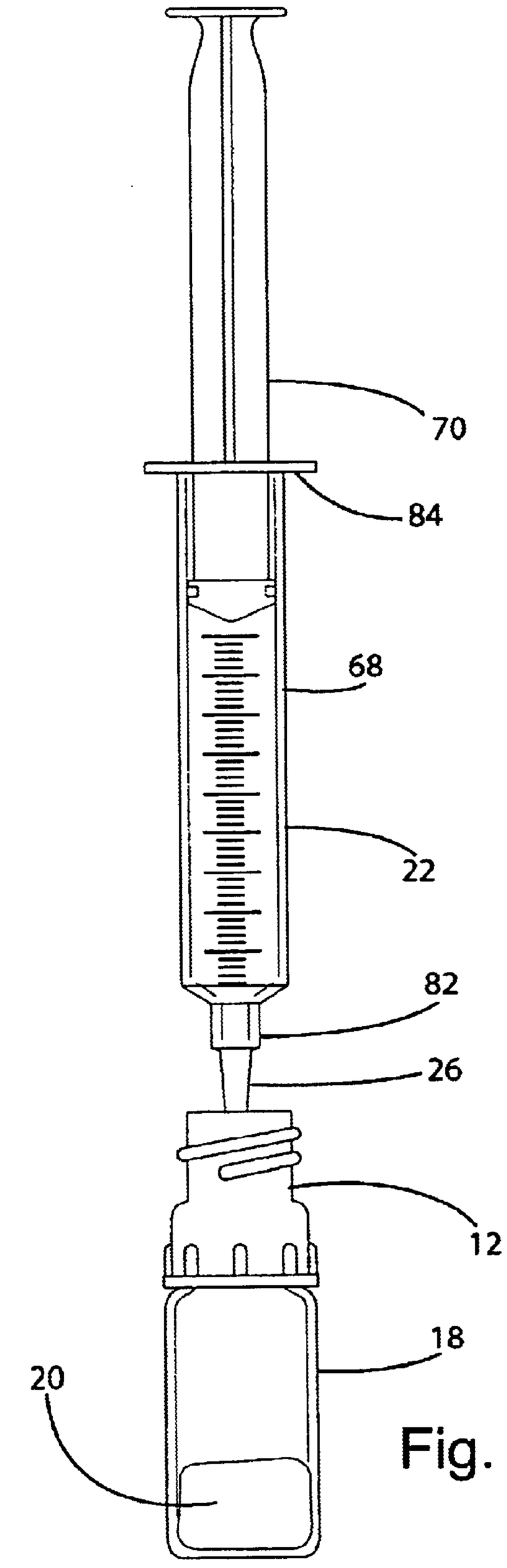


Fig. 5

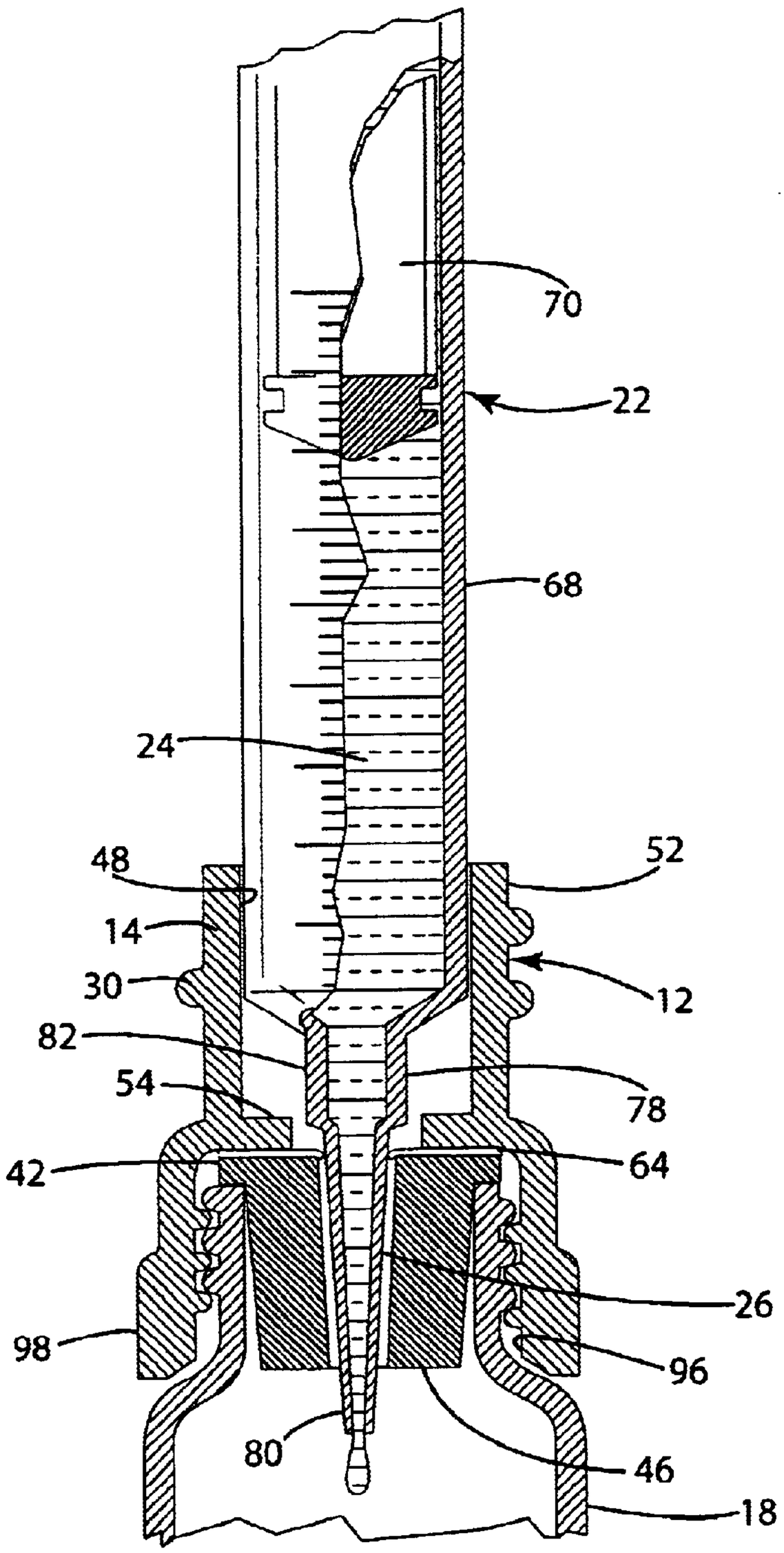


Fig. 6

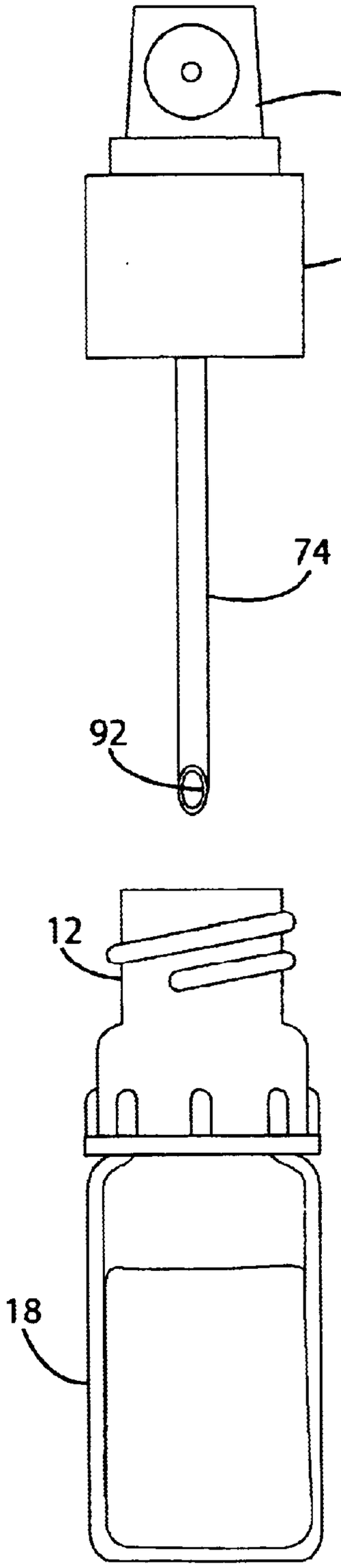


Fig. 7

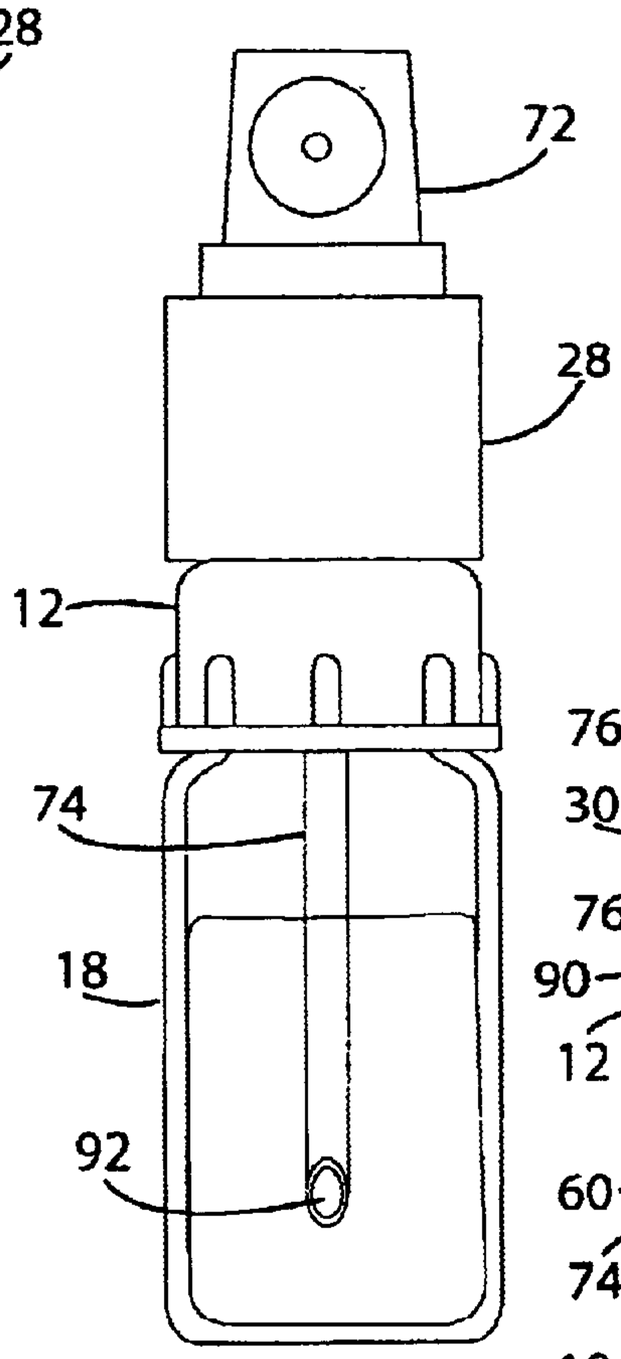


Fig. 8

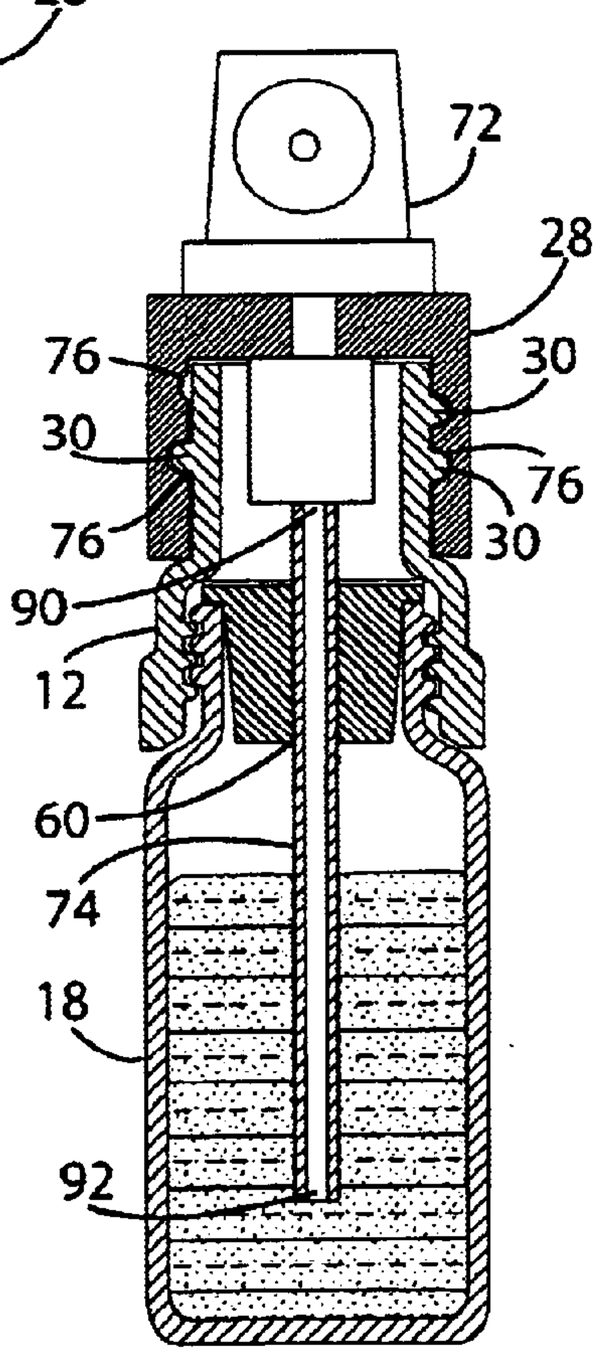


Fig. 9

CONNECTOR DEVICE FOR SEALING AND DISPENSING FREEZE-DRIED PREPARATIONS

BACKGROUND OF INVENTION

The present invention relates to connecting devices and, more specifically, to connecting devices for facilitating mixing of two separately stored components.

There are many applications where it is desirable to separately store ingredients of a product prior to use. This is especially true with products that will expire or that are most effective after initial mixing, such as cosmetics and hair dyes. Because these products can only be used for a limited time after combining the ingredients, and because in many cases only small amounts of the product are used for each application, people are often discouraged from purchasing the products in bulk. Additionally, manufacturers must limit the amount of the products that they produce to ensure the products are sold before they perish or lose efficacy. As a result, products that suffer from these problems are often sold in an unmixed state, with separated ingredients that are combined by the consumer prior to use. For example, cosmetics products are often separated into a freeze-dried powder and a solvent. To facilitate mixture of the ingredients, a variety of assemblies have been developed that permit the ingredients to be combined only when desired for use. Typically, these assemblies include two containers, each holding a separate ingredient, and a connector device that interconnects the two containers in a way that permits combination of the ingredients. The connected device providing the consumer with a clean and easy way to mix the products when the consumer wishes to use the product.

Traditional connector device assemblies generally consist of two vials, one containing a liquid and one containing a solid, and a connector device that facilitates the mixing of the two materials. These assemblies are often used in conjunction with cosmetics, where a freeze-dried powder is included in one vial and a liquid is included in another vial.

Conventional connector devices include a lower portion attached to the first vial containing the solid and an upper threaded portion. To connect the two vials, the second vial containing the liquid is screwed into the upper threaded portion of the connector device. After connecting the two vials, the liquid from the second vial is injected into the first vial and the two materials are mixed. The mixed solution is then drawn back into the second vial. To accomplish this, the second vial is generally a dropper bottle. The mixed solution is then dispensed from the second vial.

One disadvantage to this method is that all of the mixed solution is not drawn back into the first vial. The solution that is left in the first vial after transferring the solution to the second vial is generally unusable, and thus is discarded. This is particularly a problem with expensive solutions, such as cosmetic products. Another disadvantage of this method is that it can be rather difficult, requiring the user to use a pulsing motion to draw the solution back into the second vial. This can make the system difficult to use, particularly for those with limited dexterity.

SUMMARY OF THE INVENTION

The aforementioned problems are overcome by the present invention wherein a connector device is provided that permits two separately stored ingredients to be mixed in and dispensed from the same container. The connector device includes an attachment mechanism for connecting two containers together to permit combining of separately stored ingredients and another attachment mechanism for connecting a dispenser to the container containing the combined ingredients to permit dispensing of the product directly from that container.

In a preferred embodiment, the attachment mechanisms include internal threads to attach the connector device to the first container, a guide to shepherd the second container into an appropriate position with respect to the first container to permit its contents to be dispensed into the first container and external threads to attach a dispenser to the first container to dispense the mixed solution.

In a preferred embodiment, the connector device is designed to mount to the top of the first container, which contains a solid such as a cosmetic powder. A stopper is present in the neck of the first container and has an orifice through the center. A perforable membrane covers the orifice and is clamped between the connector device and the stopper. The second container is preferably a syringe containing a liquid. The syringe is used to inject the liquid into the first container. A dispensing pump is attachable to the connector device while the connector device is attached to the first container. The dispensing pump permits the combined ingredients to be easily dispensed from the first container.

In a preferred embodiment, the connector device includes a top portion (e.g. circumferential wall) that is shaped to define a syringe guide that accepts the syringe. The syringe guide shepherds the second container into the correct position through the stopper to dispense the contents of the second container into the first container

In a more preferred embodiment, the connecting device has internal threads for attachment of the connector device to the first container and external threads for connection of a dispenser to the connecting device. The external threads preferably wrap around the external surface of the top portion of the connector device.

In a further preferred embodiment, the stopper includes a central orifice covered by a perforable membrane. The perforable membrane covers the top of the stopper, including the central orifice. The diameter of the central orifice is large enough to allow insertion of the tank of the dispenser through the orifice.

The present invention also provides a method for intermixing products including the general steps of: (a) connecting a connector device to a first container containing a first ingredient; (b) connecting a second container containing a second ingredient to the first container by the connecting device; (c) dispensing the ingredients from the second container into the first container to mix the ingredients; and (d) connecting a dispenser to the first container by the connecting device.

In a preferred embodiment, the method more specifically includes the steps of (a) connecting the connector device to a first container having a stopper and a membrane; (b) inserting a dispensing device of the second container into the connector device so that the dispensing device ruptures the membrane and penetrates the stopper; (c) dispensing the second ingredient from the second container into the first container; (d) mixing the ingredients in the first container; and (e) connecting a dispensing pump to the connector device with the dispensing pump tank extending through the stopper to allow the mixture to be dispensed from the first container.

This invention provides a simple and inexpensive connector device that allows a mixture of two or more sepa-

rately stored ingredients to be mixed and dispensed from the same container. Because the mixture does not need to be drawn back into the second container (e.g., the syringe), the user does not need to manipulate the second vial to draw the mixture out. Additionally, no product is wasted because of failure to draw it back into the second dispensing vial. The use of a syringe as the second container provides a relatively failsafe mechanism for combining the two ingredients. The syringe guide shepherds the syringe end through the stopper in the desired location, thereby addressing concerns of misalignment.

These and other objects, advantages, and features of the invention will be readily understood and appreciated by reference to the detailed description of the preferred embodiment and the drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective view of a kit for mixing and dispensing a preparation according to a preferred embodiment of the present invention;

FIG. **2** is a side elevational view of the a vial using the connector device of a preferred embodiment;

FIG. **3** is a cross-sectional view of the vial and connector device taken along line **3**—**3**;

FIG. **4** is an exploded view of a vial and syringe assembly using the connector device;

FIG. **5** is a side elevational view of a vial, syringe and connector device assembly according to a preferred embodiment;

FIG. **6** is a cross-sectional view taken along line **3**—**3** of the vial, syringe and connector device assembly;

FIG. **7** is a side elevational view of the pump, vial and connector device according to a preferred embodiment;

FIG. **8** is a side elevational view of a pump, vial and connector device assembly according to a preferred embodiment; and

FIG. **9** is a cross-sectional view taken along line **3**—**3** of the pump, vial and connector device assembly.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

A product mixing and dispensing kit **10** incorporating a connector device **12** in accordance with a preferred embodiment of the present invention is shown in FIG. **1**. The kit **10** permits two separately stored ingredients to be easily combined and dispensed. In the illustrated embodiment, the kit **10** includes a first container **18**, such as a vial, that holds one of the two ingredients **20** (preferably in a powder form) and a second container **22**, such as a syringe, that contains the other ingredient **24** (preferably in liquid form). The kit **10** further includes a connector device **12**. The connector device **12** is attached to the first container **18** and permits the syringe **22** to be connected to the first container **18** so that the contents of the syringe **22** can be easily injected into the first container **18**. The kit **10** also includes a pump dispenser **28**. The connector device **12** permits the pump dispenser **28** to be easily attached to the first container **18** to permit dispensing of the combined ingredients. Although the present invention is described in connection with a kit having a vial and a syringe, the present invention is well suited for use with various alternative containers. The terms "mixture" and "combination" are used interchangeably in this application to refer to the resultant of the combination of separate ingredients. These terms are intended to include all types of mixtures, solutions, combinations and other resultants arising out of the combination of the separately stored ingredients.

As noted above, the connector device **12** is connected to a first container **18** containing a first ingredient **20**. In the illustrated embodiment, the first container **18** is a conventional glass or plastic vial having a threaded neck that is closed by a stopper **17** (as shown in FIG. **4** and described in more detail below). In the illustrated embodiment, the second container **22** is a conventional syringe that is connectable to the connector device **12**. As described in more detail below, the second container **22** has an injection device **26** that penetrates the stopper **17** during use. The second ingredient **24** is dispensed into the first container **18** through injection device **26**. In the illustrated embodiment, the dispenser **28** is a generally conventional pump that can be connected to the connector device **12** to dispense the mixture of the first ingredient **20** and the second ingredient **24**. In this embodiment, the connector device **12** includes external connectors **30** for connecting the dispenser **28** to the connector device **12**. While this invention will be described in relation to an essentially round container and connector device, it is to be understood that both elements can be of essentially any shape, such as rectangular or triangular. Additionally, although the first and second container described in the disclosure will be a vial and a syringe, respectively, essentially any container can be used for either element, such as a bottle or flask.

The kit **10** will now be described in greater detail with reference to FIGS. **2**–**9**. FIGS. **2** and **3** show the connector device **12** attached to first container **18**. The first container **18** has a top end **32**, a bottom end **36** and an external surface **38** and defines an internal space **34**. An open neck **40** is located at the top end **32** of the first container **18**. The external surface **38** of the neck **40** includes threads **44**, which permit the connector device **12** to be threadedly secured to the first container **18**. As an alternative to threads, the first container **18** may include essentially any other type of container connectors capable of connecting the first container **18**, such as a snap fitting.

A stopper **17** is fitted with the neck **40** of the first container **18**. In the illustrated embodiment, the stopper **17** is manufactured from rubber; however, the stopper **17** can be produced from essentially any material capable of retaining a substance within the first container **18**. The stopper **17** has a substantially T-shaped cross section and includes a shelf **58** and a plug **62**. The shelf **58** of the stopper **17** rests on the top end **32** of the neck **40**. The plug **62** of the stopper is contained within the neck **40** of the first container **18** and seals the first ingredient **20** in the first container **18**. The stopper **17** defines a central orifice **60**. The central orifice **60** is a hole in the stopper **17** that extends through the stopper **17** from the top end **42** to the bottom end **46** of the stopper **17**. The dimensions of the central orifice **60** will preferably depend in part on the size of the dispenser **28** as will be explained further below.

A perforable membrane **64** covers the central orifice **60**. The perforable membrane **64** is preferably a generally conventional seal that can be easily pierced by an object, such as a needle or plastic probe. Several materials can be used for this purpose, such as aluminum, tin foil and various laminated materials. The perforable membrane **64** is connected to the shelf **58** of the stopper **17**. Any conventional method, such as adhesive, can be used to maintain the perforable membrane **64** in the correct position in relation to the stopper **17**.

FIGS. **5** and **6** show the interaction of the connector device **12** and the second container **22**. The second container

22 can be any container capable of dispensing an ingredient into the first container **18**. In the illustrated embodiment, the second container **22** is a syringe having a plunger **70**, an injection device **26** and a barrel **68**. The injection device **26** is hollow and has an open first end **78** and an open second end **80**. The second end **80** of the injection device **26** may include a needle or be pointed to facilitate insertion of the injection device **26** into the stopper **17** through the perforable membrane **64**. The barrel **68** is hollow and has an open dispensing end **82** and a back end **84**. The first end **78** of the injection device **26** is connected to the dispensing end **82** of the barrel **68** so that a passage exists from the back end **84** of the barrel **68** to the second end **80** of the injection device **26**. The barrel **68** contains the second ingredient **24**. In the described embodiment, a plunger **70** projects from an open back end **84** of the barrel **68**. The plunger **70** is movable from a retracted position to an inserted position to facilitate dispensing of the second ingredient **24**. In the retracted position, the plunger **70** is substantially withdrawn from the barrel **68**. In the inserted position, the plunger **70** is fully inserted into the barrel **68** so that the plunger **70** contacts the dispensing end **82** of the barrel **68**.

The connector device **12** includes an upper portion having a circumferential wall that defines a generally cylindrical guide **14**. The top of the guide **14** is preferably sized to interfit with a portion of the second container **22** when the injection device **26** of the second container **22** is inserted into second container **22**. More specifically, the internal diameter of the circumferential wall preferably is sized to provide a close fit between the guide **14** and the second container **22** when the second container **22** is in this position. This permits the guide **14** to shepherd the second container **22** into proper alignment with the first container **12**. For example, as shown in FIG. **6**, the guide **14** may closely receive the barrel **68** of syringe **22**. The guide **14** includes an internal surface **48** and an external surface **52**. The external surface **52** includes external threads **30**. The external threads **30** can alternatively be any connection device capable of connecting the dispenser **28** to the first container **18**, such as a snap fitting.

The connector device **12** also includes a lower portion having a circumferential wall that defines a generally cylindrical rim **16**. The cylindrical rim **16** has an internal surface **96** and an external surface **98**. In the illustrated embodiment, the diameter of the rim **16** is greater than the diameter of the guide **14**. The internal surface **96** of the rim **16** includes internal threads **56**. The threads **56** can alternatively be replaced by essentiaiiy any connection device capable of interconnecting with the container connectors **44**, such as a snap fitting.

The connector device also includes a lip **54** disposed along the junction between the guide **14** and the rim **16**. The lip **54** extends inward from the internal surface **48** of the connector device **1** and defines an opening **50**. The opening **50** is preferably centered over the central orifice **60**. The lip **54** is a flat protrusion that is in contact with the shelf **58** of the stopper **17** along substantially its entire length. The presence of the lip **54** maintains the stopper **17** in the proper position within the neck **40** of the first container **18**. The lip **54** can be connected to the connector device **12** by any conventional method, such as molding the lip **54** as an integral part of the connector device **12**.

A cap **66** may be located atop the guide **14** of the connector device **12** to seal the interior of the guide and further seal the first ingredient **20** in the first container **18** in the unlikely event that the perforable membrane **64** ruptures. The cap **66** can be any cap attachable to the guide **14** of the connector device **12**, such as a conventional plastic cap. The cap **66** is preferably attached to the guide **14** by a conventional method, such as threads or a frictional fit, to prevent the cap **66** from dislodging during shipment.

FIGS. **7–9** show the interaction of the connector device **12** and dispenser **28**. The dispenser **28** can be any dispenser device capable of dispensing a mixture from the first container **18**. In the illustrated embodiment, the dispenser **28** is a generally conventional finger pump, as shown in the figures. While the invention will be described with reference to a conventional finger pump, it is to be understood that the dispenser **28** can be any structure capable of dispensing solution from the first container **8**, such as a spout or dropper.

The finger pump **28** of the illustrated embodiment is a generally conventional finger pump having a pump **72**, a tank **74** and pump connectors **76**. The pump connectors **76** can be any connection device capable of interconnecting with the connector device **12** and the dispenser **28**. The tank **74** is hollow and has an open first end **90** and an open second end **92**. The first end **90** of the tank **74** is connected to the pump **72**. The second end **92** of the tank **74** preferably includes a sharp point to facilitate insertion of the dispenser **28** into the stopper **17** through the perforable membrane **64**. In the assembled position, as shown in FIGS. **8** and **9**, the second end **92** of the tank **74** of the dispenser **28** contacts the solution contained in the first container **18**. The dimensions of the tank **74** preferably closely match the dimensions of the central orifice **60** so that a seal is created between the central orifice **60** and the tank **74** when the dispenser **28** is attached to the first container **18**. This seal prevents the solution from escaping the first container **18** during use and storage.

To assemble a connector device and vial according to this invention, a stopper **17** is inserted into the neck **40** of a first container **18**. A perforable membrane **64** is placed over the stopper **17** so that the perforable membrane **64** covers the central orifice **60** of the stopper **17**. The connector device **12** is placed atop the first container **18** and the container connectors **44** are interconnected with the rim connectors **56**. The manner of connecting the container connectors **44** and rim connectors **56** will vary depending on the types of connectors used. In a preferred embodiment both the container connectors **44** and rim connectors **56** consist of threads, and the connector device **12** is twisted onto the first container **18** until the container connectors **44** interlock with the rim connectors **56**. Upon connection of the container connectors **44** to the rim connectors **56**, the perforable membrane **64** is clamped between the stopper **17** and the lip **54** of the connector device **12**, as is perhaps best shown in FIG. **3**.

Method of Use

To use the connector device of the present invention, the cap **66** is removed from the connector device **12** to open the guide **14** and reveal the perforable membrane **64**. The injection device **26** of the second container **22** is then inserted into the central orifice **60** of the stopper **17**. The opening **50** defined by the lip **54** shepherds the injection device **26** into an appropriate position to enter the central orifice **60** of the stopper **17**. Additionally, the guide **14** closely receives the barrel **68** of syringe **22** to shepherd the syringe **22** into place and provide a more stable, positive interaction between the syringe **22** and the connector device **12**.

When inserted into the connector device **12**, the injection device **26** of the second container **22** pierces the perforable

membrane **64** and enters the central orifice **60**. In a preferred embodiment, the injection device **26** pierces the perforable membrane **64** so that the central orifice **60** is only partially exposed. The unadulterated portion of the perforable membrane **64** reduces the likelihood of dust and other matter entering the first container **18**.

The second ingredient **24** is then dispensed into the first container **18**. If a plunger **70** is used, the plunger **70** is movable from a retracted position to an inserted position. As the plunger **70** is moved from the retracted position to the inserted position, the second ingredient **24** is expelled from the barrel **68** through injection device **26**. When the plunger **70** is fully inserted into the barrel **68**, the second ingredient **24** preferably is completely expelled from the barrel **68**. The first container **18** is preferably shaken to mix the first ingredient **20** and second ingredient **24** while the first container **18** and second container **22** are still connected. Optionally, the ingredients can be mixed after connecting the dispenser **28** to the first container **18**.

After expelling the second ingredient **24** from the second container **22** and, if desired, mixing the ingredients, the second container **22** is removed from the first container **18**. The dispenser **28** is then attached to the first container **18**. Again, the unadulterated portion of the perforable membrane **64** reduce the likelihood of dust and other matter entering the first container **18** after the second container **22** is removed and before the dispenser **28** is attached. As discussed previously, the manner of connecting the dispenser **28** to the first container **18** will vary depending on the types of connectors used. In a preferred embodiment, the external connectors **30** and pump connectors **76** are threads, and the dispenser **28** is twisted onto the first container **18** until the external connectors **30** interlock with the pump connectors **76**.

When inserted into the connector device **12**, the second end **92** of the tank **74** pierces the perforable membrane **64** and the tank **74** enters the central orifice **60**. As the tank **74** is inserted into the central orifice **60**, the tank **74** preferably penetrates the perforable membrane **64** sufficiently to reveal the entire central orifice **60**. The central orifice **60** closely interfits with the tank **74** to tightly seal the first container **8**, therefore the dimensions of the central orifice **60** will vary according to the dimensions of the tank **74**. The dispenser **28** is used to dispense the mixed solution from the first container **18**. If the dispenser **28** consists of a pump; the pump **72** is repeatedly depressed to dispense the product.

The above descriptions are those of the preferred embodiments of the invention. Various alterations and changes can be made without departing from the spirit and broader aspects of the invention as defined in the appended claims, which are to be interpreted in accordance with the principles of patent law including the doctrine of equivalents. Any references to claim elements in the singular, for example, using the articles "a," "an," "the," or "said," is not to be construed as limiting the element to the singular.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A kit for intermixing ingredients comprising:

a first container containing a first ingredient;

a second container containing a second ingredient;

a dispenser for dispensing a mixture of said first ingredient and said second ingredient from said first container; and

a connector device connected to said first container, said connector device having a guide for aligning said first container with said second container in a position to allow said second ingredient to be discharged into said first container, said connector device further including a connector for connecting said dispenser to said connector device while said connector device is connected to said first container, said connector device positioning said dispenser in an appropriate position to dispense said mixture from said first container without returning said mixture to said second container.

2. The kit of claim **1**, wherein said first container includes a neck portion and further including a perforable membrane closing said neck portion.

3. The kit of claim **2**, wherein said connector device has a guide to shepherd said second container into an appropriate position with respect to said perforable membrane to allow said second ingredient to puncture said perforable membrane to discharge said second ingredient into said first container.

4. The kit of claim **3**, further including a stopper having a top surface inserted into the neck of said first container, said second container being capable of penetrating said stopper, wherein said perforable membrane covers at least a portion of said top surface.

5. The kit of claim **4**, wherein said stopper has a height and further includes a central orifice extending through said height.

6. The kit of claim **5**, wherein said perforable membrane covers said central orifice.

7. A kit for intermixing ingredients comprising:

a first container containing a first ingredient, a perforable membrane, a neck portion, and a stopper inserted into the neck portion, said stopper having a top surface, a height, and a central orifice extending through said height, said perforable membrane covering said orifice and at least a portion of said top surface, closing said neck portion;

a second container containing a second ingredient;

a dispenser for dispensing a mixture of said first ingredient and said second ingredient from said first container, said dispenser comprising a finger pump having a tank; and

a connector device connected to said first container, said connector device including a guide for aligning said first container with said second container in a position with respect to said perforable membrane to allow said second ingredient to puncture said perforable membrane and be discharged into said first container, said connector device further including a connector for connecting said dispenser to said connector device while said connector device is connected to said first container, said connector device positioning said dispenser in an appropriate position to dispense said mixture from said first container, said tank tightly fitting within said central orifice when said dispenser is attached to said first container.

8. The kit of claim **7**, wherein said perforable membrane is clamped in position between said connector device and said stopper.

9. The kit of claim **3**, wherein said second container is a syringe having a barrel, said guide being dimensioned to closely receive said barrel.

10. A kit for intermixing ingredients comprising:

a first container including a neck portion having a stopper with a top surface within said neck portion and a perforable membrane covering at least a portion of said top surface of said stopper, said first container containing a first ingredient to be mixed;

a second container containing a second ingredient to be mixed with said first ingredient to provide a mixture;

a dispenser for dispensing said mixture from said first container, said dispenser being distinct from said second container; and

a connector device connected to said first container, said connector device having a guide to shepherd said second container into an appropriate position with respect to said perforable membrane to allow said second ingredient to be discharged into said first container, said connector device further including a connector for connecting said dispenser to said connector device while said connector device is connected to said first container, said connector device positioning said dispenser in an appropriate position to dispense said mixture from said first container.

11. The kit of claim **10**, wherein said stopper has a height and includes a central orifice through said height, said central orifice being covered by said perforable membrane.

12. A kit for intermixing ingredients comprising:

a first container including a neck portion having a stopper with a top surface within said neck portion, a height, a central orifice through said height and a perforable membrane covering said central orifice and at least a portion of said top surface of said stopper, said first container containing a first ingredient to be mixed;

a second container containing a second ingredient to be mixed with said first ingredient to provide a mixture;

a dispenser for dispensing said mixture from said first container wherein said dispenser is a finger pump; and

a connector device connected to said first container said connector device having a guide to shepherd said second container into an appropriate position with respect to said perforable membrane to allow said second ingredient to be discharged into said first container, said connector device further including a connector for connecting said dispenser to said connector device while said connector device is connected to said first container, said connector device positioning said dispenser in an appropriate position to dispense said mixture from said first container.

13. The kit of claim **12**, wherein said finger pump includes a tank, said tank fitting tightly within said central orifice when said dispenser is connected to said first container.

14. The kit of claim **13**, wherein said tank has a pointed tip to facilitate penetration of the perforable membrane.

15. The kit of claim **14**, wherein said second container is a syringe.

16. The kit of claim **15**, wherein said perforable membrane is clamped between said connector device and said stopper.

17. The kit of claim **10**, wherein said second container is a syringe having a barrel, said guide being dimensioned to closely receive said barrel.

18. A method of intermixing products including the steps of:

(a) connecting a connector device to a first container, the first container containing a first ingredient and the connector device including a guide;

(b) inserting a second container into the guide of the connector device, the second container containing a second ingredient, the connector device shepherding a dispensing means of the second container into a position for directly dispensing the second ingredient into the first container;

(c) dispensing the second ingredient from the second container into the first container;

(d) mixing the second ingredient and the first ingredient in the first container to form a mixture;

(e) removing the second container from the connector device; and

(f) connecting a dispenser to the connector device, the connector device positioning the dispenser into a position to allow the mixture to be dispensed from the first container without returning the mixture to the second container.

19. The method of claim **18**, wherein the first container further includes a perforable membrane, said perforable membrane being penetrated when said dispensing means of said second container is positioned to dispense said second ingredient into said first container, and when said dispenser is positioned to dispense the mixture from the first container.

20. The method of claim **19**, further including the step of fitting a stopper into the connector device.

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